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Invited Editorial

Investigating the Arab stock markets during Arab spring

Received (in revised form): 25th February 2016

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ABSTRACT Arab Spring in Tunisia, Egypt, Bahrain, Jordan, Kuwait and Saudi Arabia affect the national economy of each country. The article investigates the impact of Arab Spring on the stock markets performance during Arab spring. The article uses daily closing price data of the six stock markets; trade volume of monthly data during 2010:12–2015:06. The article shows that the higher the causality between stock market trade volume and foreign direct investment the higher the risk. The results reveal that the Arab stock markets exhibit the persistence of volatility, mean reverting behavior and volatility clustering.

Journal of Asset Management (2016) **17,** 313–318. doi:10.1057/jam.2016.8

Keywords: Arab spring; stock markets; granger causality

The online version of this article is available Open Access

INTRODUCTION

Arab spring triggered because of dictatorship, poverty, high unemployment rate and lack of economic opportunity in most Arab countries. The government in most Arab countries control the economy, for decades centralized and bureaucratic governments worked well to control citizens and the economy but failed to deliver economical and financial growth, prosperity and social justice. Arab economy is built on unearned sources almost one-third of Arab countries economy relies on oil and gas exports the other two-third relies on foreign aid which increase structural risk in both scenarios. Arab countries need an efficient and transparent social and economic system based on a competitive, entrepreneurial and inclusive private sector. Arab Spring protest and revolution began on 17 December 2010, when a Tunisian street vendor set himself on fire to protest his harassment by police. The Arab Spring had a significant negative impact on economic and financial activity in most Arab countries. Foreign capital has been fleeing the Arab region since 17 December 2010 when protests began in Tunisia, given all the uncertainty there is no way to know when long-term foreign capital will return to the Arab countries, Arab wealthy investors are transferring their funds to Europe and North America. Arab stock markets in general tend to be volatile, sometimes even when no serious problem presents itself in a

specific market. Investors in Arab markets are therefore advised to potentially reduce risk through diversification among many different markets, and to maintain a long-term view. A good way for an individual to efficiently invest in Arab markets is through a mutual fund. Arab market funds concentrate on investments in these markets around the world or in a specific country or region. Because emerging market investment management may require extensive, and expensive, on-site company research, annual fund management expenses associated with these investments may be higher than for other types of mutual funds, Abumustafa (2007). Foreign direct investment (FDI) to Arab countries inflows decreased sharply during Arab spring, FDI inflows fell by 46 per cent during the first year of Arab spring. During 2011, the two main Arab stock markets in terms of market capita Egypt and Tunisia experienced major losses, both stock markets in Egypt and Tunisia lost about 50 per cent of total value and become very volatile. Volatility stemming from political and conflict started in the Arab countries have historically turned investors off from investing in the Arab countries. An examination of Arab stock markets indicates that the number of listed companies, legal and regulatory provision are inadequate for a degree of portfolio diversification and market capitalization is low compared with other emerging markets.

LITERATURE REVIEW

FDI in Arab markets has been volatile due to financial and political transformations. Previous studies show that stock markets tend to develop as FDI increase. Singh (1997) found that economic growth promotes stock market development and that stock markets contributed significantly to liberalization of emerging countries. Errunza (1983) indicates that foreign capital inflows have positive impact on stock market development. Yartey (2008) argues that FDI promotes stock markets development. Hermes and Lensink (2003) indicated that FDI benefits developed stock markets only. Borensztein *et al* (1998) find that FDI is important to transfer technology and higher growth only if the host country has significant inventory of human capital. The relation between FDI and trade volume in stock markets did not receive enough attention in the literature. The literature shows that the most important factors to attract FDI are market size, growth rate, cost of labor, government policies and cost of capital. Levine and Zervos (1996, 1998) and Atje and Jovanovic (1993) show that stock markets improvements promote growth dramatically in undeveloped countries.

There has been many research on determinants of financial sector development related to FDI, Garcia and Liu (1999), Demirguc-Kunt and Levine (1996), Yartey and Adjasi (2007), and many others studied the relationship between financial market and macro.

DATA AND METHODOLOGY

The article employed daily closing price and daily index return data from 2010: 12–2013:10 for six countries. The countries are Tunisia, Egypt, Bahrain, Jordan, Kuwait and Saudi Arabia. The date are obtained from the International Financial Corporation (IFC) and Standard and Poor's (S&P) database. Volume of monthly data are used to determine the short-term relationship between stock market behavior and FDI from 2010:12–2015:06.

THE UNIT ROOT TEST (DICKEY-FULLER)

We test hypotheses of unit root on FDI and trade volume of stock markets for the six countries. We used the unit root test of Im, on the Augmented Dickey-Fuller (ADF) statistic for each country. By using panel data

we can include time fixed effects to control for structural breaks yet allowing for different slopes and lag lengths.

SHORT-TERM RELATIONSHIP BETWEEN STOCK MARKET AND FDI (VAR APPROACH)

This part of the article estimation of the short-term relationship between the stock market trade volume and foreign direct investment (FDI) in the tested six countries. The model is represented in the following equations:

$$Zt = \mu + \sum_{k=1}^{p} AkZt - k + \Psi Dt + et \qquad (1)$$

Note that Zt is a vector of dependent variables, μ is a column vector of constants, Ak is a coefficient matrix, Dt is a vector of non-stochastic exogenous variables with the corresponding parameter matrix ψ, and et is a column vector of innovations.

$$Zt = \frac{\Delta lnVOLUME}{\Delta lnFDI} \qquad (2)$$

EMPIRICAL RESULTS

Table 1 shows that both FDI and trade volume do not reject a unit root under either the strict or the flexible specification, unit root exist in the data. Then we test that the first differences of the variables are stationary, under the strict and flexible specification unit root is still not rejected.

The results of Tables 2 and 3 are explained by high volatility of liquidity, levels of political and legal risk, investors, speculators, fund managers and political money. Politics have been the main factor of volatility, many investors and speculators underestimated the seriousness of tensions uncovered by the Arab Spring. The short-term inflows and outflows

Table 1: Panel unit root *t* tests

Variable	*Homogeneous lags no time fixed effects*	*Heterogeneous lags time fixed effects included*
FDI	0.58	–0.11
ΔFDI	083	4.67
Trade Volume	1.56	–1.56
Δ Trade Volume	2.56	–1.76
ε_{it} (Cointegration)	1.45	–1.92

Rejection of unit root FDI, ΔFDI, Trade Volume and Δ Trade Volume. is for *t* values below –2.08. Rejection of unit root ε_{it} (Cointegration) is for *t* values below –2.03. Δ is the first difference operator, that is, $\Delta FDI = FDI_t - FDI_{t-1}$.

Table 2: Variance of trade volume in per cent

Variance of ΔInvolume		
Monthly variance	*Volume*	*FDI*
1	100.0	0.0
3	98.6	0.3
6	95.2	0.9
9	95.1	2.5
12	94.6	3.4
15	94.7	3.1
18	96.8	2.3
21	98.1	1.3
24	93.5	2.1
27	95.7	2.9
30	93.7	3.2
33	92.5	2.1
36	93.4	1.4
39	90.9	2.0
42	92.3	3.2
45	90.3	1.2
48	94.3	3.4
51	96.3	1.9

Table 3: Variance of FDI in per cent

Variance of ΔlnFDI		
Monthly variance	*Volume*	*FDI*
1	56.3	92.4
3	54.6	83.2
6	34.5	84.1
9	65.6	67.9
12	56.8	82.9
15	76.2	81.3
18	45.2	82.4
21	58.3	80.4
24	65.3	76.2
27	62.2	72.1
30	45.6	89.4
33	47.5	67.6
36	54.3	76.2
39	48.2	64.3
41	56.8	69.2
45	48.2	70.1
48	52.3	70.0
51	59.1	69.3

Table 4: Descriptive statistics of daily returns

Country	*Mean*	*Standard deviation*	*Skewness*	*Kurtosis*	*Maximum*	*Minimum*	*MRPUR*
Tunisia	–0.0037	0.0236	–0.5231	11.453	0.0453	–0.0451	0.0512
Egypt	–0.0045	0.0192	–0.3453	13.659	0.0231	–0.0231	0.0629
Bahrain	–0.0032	0.0271	–0.3216	13.564	0.0231	–0.538	0.0592
Jordan	–0.0023	0.0293	0.3256	9.0567	0.0398	–0.0512	0.0628
Kuwait	0.0016	0.0192	0.4982	12.503	0.0289	–0.0671	0.0492
Saudi Arabia	0.0027	0.0179	0.5938	11.412	0.0213	–0.0827	0.0729

Note: Descriptive data – We use the Pearsons measure of skewness and the Kendall-Stuart measure of kurtosis. MRPUR is the Mean Return Per Unit Risk defined as the ratio of the mean to the standard deviation of daily returns.

Table 5: Corrélation coefficients

	Tunisia	*Egypt*	*Bahrain*	*Jordan*	*Kuwait*	*Saudi Arabia*
Egypt	0.7235	–	–	–	–	–
Bahrain	–0.0342	–0.0453	–	–	–	–
Jordan	–0.0271	0.0172	0.0178	–	–	–
Kuwait	–0.0562	0.0218	0.0294	0.0727	–	–
Saudi Arabia	–0.0271	0.0927	0.0527	–0.0372	0.0628	1

of FDI is due to political factors 'Hot Money' inflows and outflows effected the volume of trade in most of the six tested countries stock markets.

Tables 2 and 3 show the relationship between FDI and trade volume in the six stock markets, uncertainty over what political action of Arab spring explain the volatile relation every 9–12 month period. Variance change significantly over the period of 9–12 month. The results are not surprising, trade volume is auto correlated with FDI. FDI is influenced by movements in the six stock markets.

Table 4 reports the descriptive statistics of the daily returns from 2010:12–2015:06 for the six countries. Table 4 shows us that in terms of average daily return Kuwait and Saudi Arabia performed best, earning 0.16 and 0.27 per cent, respectively. Egypt and Tunisia performance was low,−0.45 and −0.37 per cent, respectively. Egypt and Jordan have the highest standard deviations: 29 and 17 per cent, respectively. The standard deviation of returns for Saudi Arabia is 17 per cent which is the lowest among the countries. The mean return per unit of risk (MRPUR), which is the ratio of the mean return to the standard deviation of returns provides an estimate of the trade off in the relationships between return and risk. The highest MRPUR found in Saudi Arabia 0.0729 the lowest found in Qatar of 0.0125. The highest MRPUR is one measure of an optimum portfolio.

Table 5 shows the correlation coefficients between the daily index return of each pair of the six countries. The lower the correlation the greater the diversifying effect of investing in both markets (Fifield *et al*, 1998). Table 5 reveals that the correlations between most markets were low, and often negative. The lowest correlation was between Tunisia and Kuwait −0.0562, the highest correlation was between Kuwait and Jordan 0.0727.

EFFICIENCY IN ARAB STOCK MARKETS DURING ARAB SPRING

This article differs from similar studies since it focused on Arab stock markets during the Arab spring. The Random Walk tests used to determine whether stock prices follow a random walk (Fama, 1965; Abumustafa, 2008).

Table 6: ANOVA test for day of the week effect

Country	*F*	*P-value*	*N*
Tunisia	1.1523	0.0126	198
Egypt	1.4521	0.0251	191
Bahrain	1.9341	0.0192	223
Jordan	1.8342	0.0156	234
Kuwait	1.6723	0.0183	231
Saudi Arabia	1.9027	0.0190	235

Table 7: ANOVA test for semi-monthly effect

Country	*F*	*P-value*	*N*
Tunisia	0.5231	0.0253	198
Egypt	0.7562	0.0372	191
Bahrain	0.5612	0.0294	223
Jordan	0.8342	0.0135	234
Kuwait	0.9836	0.0279	231
Saudi Arabia	0.7843	0.0183	235

An efficient stock market is one in which stock prices adjust quickly to new information, past stock prices can be used to predict future prices. There are three types of market efficiency, the weak form, semi-strong and the strong market efficiency, (Fama, 1970). Many researchers have studied seasonal anomalies in developed markets, (El-Erian and Kumar, 1995) show that these market inefficiencies are one factor that limits the flow of funds into emerging stock markets.

DAYS OF THE WEEK EFFECT

Balaban show that Monday Effect present in emerging markets. To test for Monday effect we used the following hypothesis test using ANOVA:

Hypothesis 0: Return of all five days of the week is equal.

Hypothesis 1: At least one day of the week has a return different from the average.

Table 4 shows that all six countries do not reject the null hypothesis at the 5 per cent and 1 per cent levels of significance.

SEMI-MONTH EFFECT

Ariel (1987) show that the stocks returns during the first half of the month are significantly higher than the second half of the month.

We test for semi-month effect by performing the following hypothesis test:

Hypothesis 0: The average daily log return of the first half of the months.

Hypothesis 1: The average daily log return of the second half of the months.

Table 7 results are consentient with Table 6 results, it shows that all six countries do not reject the null hypothesis at the 5 and 1 per cent levels of significance.

CONCLUSION

Arab spring will continue to have a negative economic and financial impact during 2014 and 2015 on most Arab countries, on the other hand expectation is high for GCC countries especially Saudi Arabia to have stronger growth at the Micro, Micro and financial markets levels. Arab spring has created huge investment opportunities for speculators during the last 4 years and half especially in Egypt.

The statistical result support the economic theory of causality between foreign direct investment and stock market movements in short term. Liquidity provision, speculative trading and premature financial tools are the main reasons for negative performance of most Arab stock markets during Arab spring. In the very short term, Arab stock markets is the best environment for speculators due to extreme volatility most of Arab stock markets have been experiencing during the last 3 years and expected to continue for a couple more years.

It has been the financial system that has historically caused problems for the economy and stock markets in the Arab countries. Arab stock markets remain relatively close to international investors. There are often limits

on the amount foreigners that can jointly hold in a company.

Despite signs of renewed investor interest and stability in a couple of Arab countries, Arab spring second wave is expected to be worse than the 2010 one, it is expected that the real crash of stock markets in Arab countries is coming, intense wealth destruction will occur at the first sign of the second wave of Arab spring stock markets will fall sharply, a 90 per cent plunge, investors should be very cautious.

REFERENCES

Abumustafa, N. (2007) Risk diversification in emerging economies. *Risk Management Journal* 9(1): 36–43.

Abumustafa, N. (2008) Benefiting from diversity in Middle Eastern stock markets. *Applied Financial Economics* 18(3): 229–237.

Ariel, R.A. (1987) A monthly effect in stock returns. *Journal of Financial Economics* 18(1): 116–174.

Atje, R. and Jovanovic, B. (1993) Stock markets and development. *European Economic Review* 37(2–3): 632–640.

Borensztein, E., De Gregorio, J. and Lee, J.-W. (1998) How does foreign direct investment affect economic growth. *Journal of International Economics* 45(1): 115–135.

Demirguc-Kunt, A. and Levine, R. (1996) Stock market development and financial intermediaries: Stylized facts. *World Bank Economic Review* 10(2): 291–321.

El-Erian, M.A. and Kumar, M.S. (1995) Emerging equity markets in Middle Eastern countries. *International Monetary Fund Staff Papers* 42(2): 313–343.

Errunza, V.R. (1983) Emerging markets – A new opportunity for improving global portfolio performance. *Financial Analysts Journal* 39(5): 51–58.

Fama, E.F. (1965) Random walks in stock market prices. *Financial Analysis Journal January-February* 16(3): 75–78.

Fama, E.F. (1970) Efficient capital markets: A review of theory and empirical work. *Journal of Finance* 25(2): 383–398.

Fifield, S.G.M., Lonie, A.A. and Power, D.M. (1998) A review of research into emerging stock markets. *Economic Issues* 3(1): 1–35.

Garcia, V.F. and Liu, L. (1999) Macroeconomic determinants of stock market development. *Journal of Applied Economics* 2(1): 29–59.

Hermes, N. and Lensink, R. (2003) Foreign direct investment, financial development and economic growth. *Journal of Development Studies* 40(1): 142–163.

Levine, R. and Zervos, S. (1996) Stock market development and long-run growth. *World Bank Economic Review* 10(2): 323–339.

Levine, R. and Zervos, S. (1998) Stock markets, banks, and economic growth. *American Economic Review* 88(3): 537–558.

Singh, A. (1997) Financial liberalization: Stock markets and economic development. *The Economic Journal* 107(442): 771–782.

Yartey, C.A. (2008) The Determinants of Stock Market Development in Emerging Economies: Is South Africa Different. IMF Working Paper 8(38).

Yartey, C.A. and Adjasi, C.K. (2007) Stock Market Development in Sub-Saharan Africa: Critical Issues and Challenges. IMF Working Paper 7(209).

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